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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/813,304	03/31/2004	Jeong-Ho Lee	6192.0366.US	5202

7590 02/22/2006

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EXAMINER	
DI GRAZIO, JEANNE A	

ART UNIT	PAPER NUMBER
2871	

DATE MAILED: 02/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/813,304	LEE ET AL.	
	Examiner	Art Unit	
	Jeanne A. Di Grazio	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *ELC 12/1/2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-27* is/are pending in the application.

4a) Of the above claim(s) *7-13,18 and 24-27* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6,14-17 and 19-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *9/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Priority

Priority to Japanese Patent Applications 10-2003-0020087 (March 31, 2003) and 10-2003-0038220 (June 13, 2003) is claimed.

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Election/Restrictions

Applicant's election without traverse of Embodiment II (Claims 2-6, 14-17 and 19-23) in the reply filed on December 1, 2005 is acknowledged.

Claims 7-13, 18 and 24-27 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to nonelected inventions there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on December 1, 2005.

Claim Objections

Claim 21 is objected to because of the following informalities:

As to claim 21, the recitation "a color filter disposed between the first passivation layer and the protrusion and the pixel electrode" is not clear.

The recitation is not clear because the exact position of the color filter cannot be determined from the claim. For example, the color filter may be between the first passivation layer and the protrusion, or between the first passivation layer and the pixel electrode, or between the protrusion and the pixel electrode.

Appropriate correction is required.

Claim 22 is objected to because of the following informalities:

As to claim 22, the recitation "a second passivation layer formed on the color filter and the protrusion and the pixel electrode" is not clear.

The recitation is not clear for two reasons.

(1) Because the position of the color filter is not clear (See Objection to claim 21) the position of the second passivation layer is not clear.

(2) The second passivation layer reads as if it is formed on the color filter and formed on the protrusion and formed on the pixel electrode. That is, it may be read to mean that there is more than one 'second' passivation layer.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-3, 14 and 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent 6,671,020 B2 (to Kim et al.)(filed: Dec. 20, 2000) in view of United States Patent 6,573,965 B1 (to Liu et al.).

As to claims 1 and 14, Kim teaches and discloses with reference to Figures 4-6 (one embodiment) a multi-domain liquid crystal display device comprising a substrate (Figure 5A, first substrate 31), a gate line (gate line 1) formed on the substrate (31) and including a gate electrode (gate electrode 11 – see Figures), a gate insulating layer (gate insulating film 35) formed on the gate line (1), a semiconductor layer (semiconductor layer 5 and ohmic contact layer 6) formed on the gate insulating layer (35) a data line (data lines 3) formed at least in part on the semiconductor layer (See Figure 4A), a drain electrode (source / drain electrodes 7 and 9) formed on the semiconductor layer (5, 6) at least in part and separated from the data line (See Figures), a first passivation film (passivation film 37) formed on the data line (3) and the drain electrode (9), a first protrusion (dielectric structure 35) is formed on a counter substrate opposing a pixel electrode (13) which is formed on the passivation film (37). The pixel electrode (13) is also connected to the drain electrode at least through a contact hole (See Column 7, Lines 1-15).

Kim does not appear to explicitly specify that the first protrusion is formed on the pixel electrode side.

Liu teaches and discloses a multi-domain wide viewing angle liquid crystal display having slits on electrodes and bumps above the slits wherein (See Figure 3) dielectric bumps (= Applicant's protrusions) are formed above a pixel electrode wherein further the pixel electrode has slits (bumps = 309-312) and slits (302 and 303). The bumps are also opposite a bus line (309).

It would have been obvious to one of ordinary skill in the art of liquid crystals at the time the invention was made to modify Kim in view of Liu because as taught by Liu:

"The advantages of forming slits on the pixel electrodes and forming bumps above the slits are: shortening the rotating distance of liquid crystal molecules 314 directed by the bumps, increasing the optical response speed and the gray level response speed of the LCD, and reducing the generation of the disclination lines. Because the generation of the disclination lines is reduced, the transmittance within the black matrix area of the invention has 15% to 20% improvement over the conventional multi-domain LCDs." (Liu at Column 4, Lines 40-55).

Liu also teaches:

"According to the invention, the bump-with-slit structure formed on at least one substrate uses the bumps and the fringe field effect, or the so-called electrode slit effect, to control the tilt direction of the liquid crystal molecules and to form a multi-domain LCD cell of multiple independent directions. Therefore, the internal compensation of liquid crystal molecules decreases the color dispersion of the LCD, increases the response speed and reduces the generation of disclination lines. Also, the driving voltage for the LCD is lower and the process window is larger." (Liu at Column 2, Lines 35-65).

Thus, claims 1 and 14 are rejected.

As to claim 2, as noted, the pixel electrode has cutouts (= slits).

Thus, claim 2 is rejected.

As to claim 3, as can be seen in Figure 3, there are dielectric bumps disposed in the slits.

Thus, claim 3 is rejected.

As to claims 21 and 22, the references teach color filters. See Claim Objections above.

Thus, claims 21 and 22 are rejected.

As to claim 23, the semiconductor layer has substantially the same planar shape as the data line and drain electrode (See Kim I Figure 6D).

Thus, claim 23 is rejected.

Claims 4-6 and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent 6,671,020 B2 (to Kim et al.)(filed: Dec. 20, 2000) in view of United States Patent 6,573,965 B1 (to Liu et al.) and further in view of United States Patent Application 2002/0163604 A1 (to Kim et al.)(Kim II).

As to claims 4-6 and 15-17, Kim I does not appear to explicitly specify what its auxiliary common electrode (15) overlaps.

However, Kim II teaches and discloses that a storage electrode at least overlapping a pixel and teaches that:

" ... the storage capacitance is essential element to accomplish improvement of screen quality, thereby causing lowering of screen quality when the storage capacity is decreased below a predetermined level." [0039].

It would have been obvious to one of ordinary skill in the art of liquid crystals at the time the invention was made to modify Kim I in view of Kim II for high screen quality through controlling storage capacitance.

Thus, claims 4-6 and 15-17 are rejected.

Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent 6,671,020 B2 (to Kim et al.)(filed: Dec. 20, 2000) in view of United States Patent

6,573,965 B1 (to Liu et al.) and further in view of United States Patent 6,897,918 B1 (to Nonaka et al.).

As to claims 19 and 20, Kim does not appear to explicitly specify a spacer having a height larger than the protrusion and disposed on the same layer as the protrusion and that the protrusion and spacer comprise an organic material.

Nonaka teaches a color filter and protrusion and teaches spacers, protrusions and a spacer made of the same material as the protrusion for controlling liquid crystal alignment (Column 3, Lines 30-40).

It would have been obvious to one of ordinary skill in the art of liquid crystals at the time the invention was made to modify Kim in view of Nonaka for controlling liquid crystal alignment.

Thus, claims 19 and 20 are rejected.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeanne A. Di Grazio whose telephone number is (571)272-2289. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim, can be reached on (571)272-2293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jeanne Andrea Di Grazio
Patent Examiner
Art Unit 2871

JDG

ANDREW SCHECHTER
PRIMARY EXAMINER